

## MISCELLANEOUS.

*Investigations on Eggs with a Double Germ, and on the Origin of Double Monsters in Birds.* By M. C. DARESTE.

THE coexistence of two embryos upon a single vitellus, indicated by Wolf in the last century, has since been repeatedly noticed. The author considers that the facts observed, although not numerous, belong to two phenomena of very different nature, origin, and physiological starting-points.

Sometimes, during the first days of incubation, two distinct blastoderms, completely separated from each other, and each presenting its transparent area, are observed. Subsequently these blastoderms become united by the margins and form a single blastoderm, which, however, is the result of the fusion of two primitively distinct blastoderms. Each transparent area may then give origin to an embryo, and each embryo may envelope itself in its proper amnios. The two embryos thus remain completely separated, being only mediately united by the vitellus; a second mediate union may also be effected, subsequently to their formation, by the fusion of the vascular areas, where these meet.

In the second case there exists only a single blastoderm, and in this a single transparent area, which is remarkable, however, for its irregular form. The two embryos which are developed in this single but irregular area give origin to a single vascular area (which, however, is formed, at least partially, of the elements of two normal vascular areas), and they become enveloped by a single amnios.

The two embryos thus developed upon a common transparent area remain in some cases completely isolated, except as regards the indirect union effected by the vitellus. Then both of them may be sometimes constructed normally; sometimes one of them is imperfectly developed and forms an acephalous monster. In other cases the two embryos unite directly and produce a double monster; and this union may be either early or late.

The origin of these two modes of coexistence of two embryos upon a single vitellus is very evident. In the first case the egg contains two distinct cicatriculæ before incubation; in the second, only one. The physiological consequences of these two arrangements are very remarkable. It is no longer supposed that double monstrosity is the result of the fusion of two embryos developed upon distinct vitelli, and it is admitted that the coexistence of two embryos upon a single vitellus is the starting-point of all cases of double monstrosity. The author goes still further, and maintains that, for the formation of a double monster, the embryos must actually originate upon a single transparent area, or, in other words, in a blastoderm proceeding from a single cicatricula. But it remains to be ascertained why in some cases the two embryos are developed separately, whilst in others they form a double monster.

This question, moreover, is connected with another more general one. Is this single cicatricula, which gives origin sometimes to two distinct embryos and sometimes to two united ones, really simple

and similar to the ordinary cicatriculæ, or is it the result of the early fusion of two primarily distinct cicatriculæ or germs? Since M. Balbiani has shown how the germ is formed in the ovule, we may consider whether certain ovules may not contain a cicatrícula apparently simple, but formed by the fusion of two originally distinct germs. And the coexistence of two germs within a single ovule is proved by the coexistence of two separate cicatriculæ upon the same vitellus.

The author has recently observed an egg presenting a very singular arrangement, but which is explained by a combination of the two cases above described. In this there were two transparent areas upon a single blastoderm and in a single vascular area, the latter of a very abnormal form. One of the transparent areas was normal, and presented a normal embryo; the other, of an irregular form, presented two embryos, one normal, the other abnormal. This fact, although apparently very complex, may be very simply explained by the coexistence upon the same vitellus of two distinct cicatriculæ, one normal, the other formed by the fusion of two germs, and by the production of a single blastoderm from these cicatriculæ during incubation.—*Comptes Rendus*, March 20, 1865, p. 562.

*On two Starfishes from Costa Rica.* By E. VON MARTENS.

On the 16th January Dr. E. von Martens communicated to the Academy of Sciences at Berlin a description of two species of Starfishes from Costa Rica. The first of these is the *Oreaster armatus*, Gray, which is described as follows:—

1. *Oreaster armatus*, Gray, sp.

Body pentagonal, with strongly incurved sides; proportion of the radius of the disk to that of the arms as 1 to  $1\frac{1}{2}$  nearly. Dorsal surface but little elevated. Ambulacral papillæ in two rows; on the inner plates three and more, rarely two, placed close together upon each plate; on each of the outer plates one larger papilla. The plates of the ventral surface are thickly set with globular granules, and bear on the middle of each a large cylindrical tubercle which is obtuse at the apex. The lower marginal plates belong entirely to the ventral surface: they are thickly set with globular granules, and bear in the middle of each a larger, conical, moderately acute spine, which is villous, like satin, and the narrowed flat base of which is surrounded, as by a wall, with the granules of the marginal plate itself. There are seventeen inferior marginal plates between the apices of each pair of arms; they are all nearly square. The superior marginal plates, which alone form the margin, are twice as high as their breadth in the middle of the space between two arm-tips; towards the latter they become broader in proportion, and finally nearly square. Their number between each pair of arm-tips is fourteen. They are beset with granules, in the same manner as the inferior marginal plates, and bear a precisely similar spine in their middle; many of them, however, are destitute of the spine and even of every